

REMARKS

This amendment is responsive to the Office Action dated November 16, 2007 and received in this application. In the amendment, claims 1 and 13 have been amended. These amendments add no new matter. Claims 1-18 remain pending in the application. Applicant respectfully requests reconsideration and allowance of the pending claims in light of these amendments and the following remarks.

Claims 1, 3-4 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 4,913,525 to Asakura et al. ("Asakura") in view of U.S. Pat. No. 6,488,419 to Kato et al. ("Kato"). This rejection is traversed.

Claim 1 has been amended and now recites: *[a]n external cavity type semiconductor laser, comprising:*

a semiconductor laser device having a plurality of layers including an activation layer;

a window glass disposed opposite to a beam emission surface of the semiconductor laser device;

a grating that receives a beam emitted from the semiconductor laser device through the window glass and returns a beam having a predetermined wavelength to the semiconductor laser device; and

a lens disposed between the semiconductor laser device and the grating and which collects the beam emitted from the semiconductor laser device,

wherein the window glass is arranged in a first state or a second state,

wherein in the first state the window glass is nearly in parallel with a first axis and is not in parallel with a second axis,

wherein in the second state the window glass is not in parallel with the first axis, the window glass being nearly in parallel with the second axis, and

wherein the first axis is nearly perpendicular to a surface that is in parallel with at least one of the boundary surfaces of the activation layer and other layers of the semiconductor laser device, and the second axis is nearly in parallel with the beam emission surface of the semiconductor laser device and nearly perpendicular to the first axis.

First, it is noted that with external cavity semiconductor lasers one of the two mirrors is external to the diode structure, which results in the cavity having a free-space region. This is in contrast to those semiconductor lasers wherein the mirrors are part of the diode structure. With this in mind, it is noted that in Applicant's claimed invention the window glass is placed between the semiconductor laser and the out window lens, and when the window glass is placed into the first and second states, the incidence of chromatic aberration is prevented.

For example, with reference to FIG. 7B of Applicant's specification and the corresponding text,

"[t]he window glass 16 is inclined to the beam emission surface 19 of the laser diode 11 so that the surface of the window glass 16 is in parallel with the second axis 18B, but not in parallel with the first axis 18A. In this example, it is assumed that an angle of the first axis 18A and the window glass 16 is denoted by A. In this example, A is a small angle for example 1.degree.

... When the surface of the window glass 16 is inclined to the first axis 18A for e.g. 1.6.degree., namely $A=1.6.\text{degree.}$, since wave front aberration is as large as $0.15\lambda\text{P-V}$ (peak to valley), which cannot be practically used. Thus, an allowable range of the inclination angle A of the surface of the window glass 16 is very narrow. In the example shown in FIG. 7B, although the window glass 16 is inclined so that an upper portion of the window glass 16 is close to the laser diode 11. Instead, a lower portion of the window glass 16 may be close to the laser diode 11."

(U.S. Pub. No. 2007/0064755 A1, [0040]-[0041]).

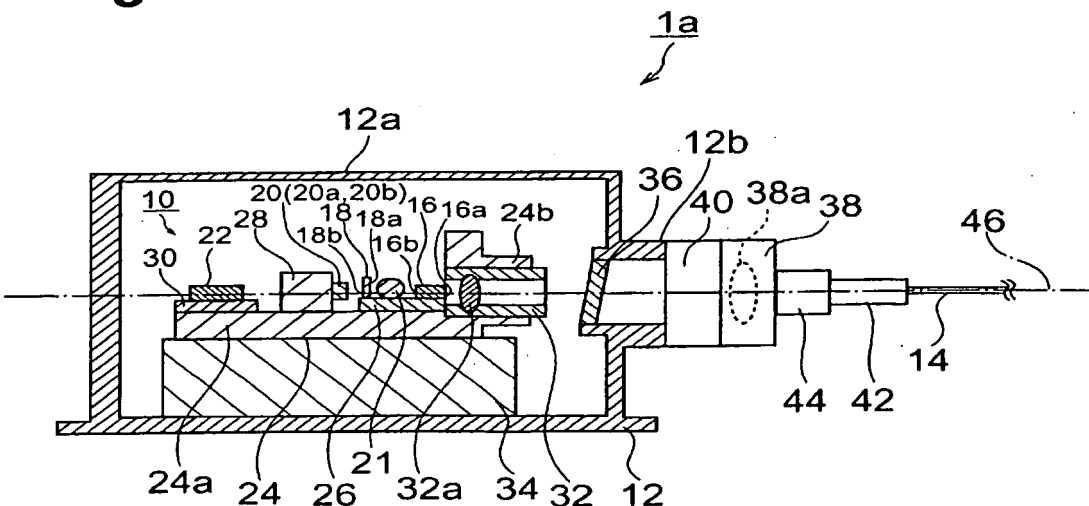
It should be noted that the outgoing lights following the window glass 16 are actually in parallel and not divergent as could be construed from the figure.

These claimed features are neither disclosed nor suggested by Asakura or Kato, alone or in any combination. Asakura discloses a frequency stabilized light source that implements a semiconductor laser chip and a finite Fourier diffraction grating with a corrugated profile. A diffraction grating causes light emitted from a first facet of the laser chip to be fed back, so that the laser chip emits the output light with a stable wavelength from another facet.

Asakura is clearly divergent from Applicant's claimed invention, and fails to disclose or suggest various claimed features. As noted in the Action, Asakura does not teach a window glass disposed opposite to a beam emission surface of the semiconductor laser device. Nor does Asakura disclose wherein the window glass is arranged in a first state or a second state as claimed, among other things. (See Action, at pp. 2-3).

Kato does not remedy the deficiencies of Asakura. Kato discloses a light emitting module. FIG. 2 of Kato is reproduced below.

Fig.2



Kato is generally deficient in that it does not disclose a lens wherein divergent light is altered to be in parallel. Although the light that has passed through the window glass may be in parallel, this is only because the incoming light is in parallel. Moreover, the tilted lens (36) of Kato is the out window lens. It is thus clearly distinct from Applicant's claimed invention, wherein the window glass is arranged in first or second states, with the corresponding features as claimed. Thus Kato is completely different from the claimed features. With specific reference to the claims, the combination of references thus clearly fail to disclose or suggest "*wherein the window glass is arranged in a first state or a second state, wherein in the first state the window glass is nearly in parallel with a first axis and is not in parallel with a second axis, wherein in the second state the window glass is not in parallel with the first axis, the window glass being nearly in parallel with the second axis, and wherein the first axis is nearly perpendicular to a surface that is in parallel with at least one of the boundary surfaces of the activation layer and other layers of the semiconductor laser device, and the second axis is nearly in parallel with the beam emission surface of the semiconductor laser device and nearly perpendicular to the first axis.*"

Since even the combination of Asakura and Kato would still fail to yield the features of Applicant's claimed invention, a prima facie case of obviousness has not been presented for independent claim 1. Claims 3, 4 and 11 depend from claim 1 and thus incorporate the distinct features recited therein, as well as their separately recited, patentably distinct features.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 3-4 and 11 under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato.

Claims 2 and 7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, and further in view of U.S. Pat. No. 5,870,417 to Verdiell et al. ("Verdiell"). This rejection is traversed.

Claims 2 and 7 depend from claim 1 and thus incorporate the features recited therein. As described above, Asakura and Kato fail to disclose these claimed features. Verdiell is a thermal

compensator for waveguide DBR sources, and is introduced as purportedly disclosing an angle between the surface of the window glass and the second axis in the range of 5-12 degrees. Even assuming for the sake of argument that these features might be disclosed, there is no disclosure or suggestion of the above-described features regarding claim 1, so the three way combination of references would fail to yield what is claimed therein.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 2 and 7 under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, and further in view of Verdiell.

Claims 5, 6 and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, and further in view of Mizuno et al., "100mW Kink-free Blue-violet Laser Diodes with Low Aspect Ratio," Proceedings of the 11th Sony Research Forum, 2001 ("Mizuno"). This rejection is traversed.

Claims 5, 6 and 12 depend directly or indirectly from independent claim 1, and thus incorporate the features recited therein. Asakura and Kato fail to disclose such features as described above. Mizuno is introduced as disclosing a blue laser diode and certain power features, but Mizuno does not address the above-described features of claim 1.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 5, 6, and 12 under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, and further in view of Mizuno.

Claims 8-10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, and further in view of U.S. Pat. No. 7,027,469 to Sidorin ("Sidorin"). This rejection is traversed.

Claims 8-10 depend from claim 1 and thus incorporate the features recited therein. As described above, Asakura and Kato fail to disclose these claimed features. Sidorin is introduced for purported disclosures of the additional features recited in claims 8 and 10 regarding cavity length,

but does not address and offers no remedy to the deficiencies of Asakura and Kato. Thus even the combination of Asakura, Kato and Sidorin would still fail to yield the features of Applicant's claim 1, let alone dependent claims 8-10.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 8-10 under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, and further in view of Sidorin.

Claims 13-18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, Mizuno, Verdiell and Sidorin. This rejection is traversed.

For reasons similar to those provided regarding claim 1 above, claim 13 is neither disclosed nor suggested by Asakura in view of Kato. Nor do the references to Mizuno, Verdiell, and Sidorin remedy the deficiencies of the first two references. Accordingly, a prima facie case of obviousness has not been presented regarding claim 13. Claims 14-18 depend from claim 13 and thus incorporate the features recited therein. These claims are thus also distinct for their incorporation of the features in the independent claim as well as for their separately recited patentably distinct features.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 13-18 under 35 U.S.C. § 103(a) as being unpatentable over Asakura in view of Kato, Mizuno, Verdiell and Sidorin.

In view of the foregoing remarks, all claims are believed to be in condition for allowance. If any further issues remain, the Examiner is invited to telephone the undersigned to resolve them.

This response is believed to be a complete response to the Office Action. However, Applicant reserves the right to set forth further arguments supporting the patentability of their claims, including the separate patentability of the dependent claims not explicitly addressed herein, in future papers. Further, for any instances in which the Examiner took Official Notice in the Office

Action, Applicant expressly does not acquiesce to the taking of Official Notice, and respectfully request that the Examiner provide an affidavit to support the Official Notice taken in the next Office Action, as required by 37 CFR 1.104(d)(2) and MPEP § 2144.03.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 18-0013, under Order No. SON-3163 from which the undersigned is authorized to draw.

Dated: February 19, 2008

Respectfully submitted,

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